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INFORMATION PRODUCT: HOW INFORMATION CONSUMERS' PERCEPTION OF 'FITNESS FOR USE' CAN BE AFFECTED

(Research-in-progress)

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Abstract: Emerging paradigms such as big data, business data analytics and business data science increased the importance of focusing on the notion of data and information quality more than before. Although more mechanized processes are being used to prepare pieces of information to be fit-for-use for information consumers, how information consumers perceive the quality of information and its difference with the actual quality of information gets more important as information consumers are at the position to judge the quality. Motivated by the notion of Perceived Information Quality (PIQ), this study explains the role of adoption and implementation of Information Technology (IT) in the process of perceiving information quality by information consumers. For the purpose of this research, seven Iranian organizations were studied. Due to lack of proper communication and institutional link between these organizations and the technology developers, it has been challenging for the studied organizations to implement the adopted technologies in the context of use. This study finds that the solution which is provided for information quality issues after the implementation of a type of information technology has direct impact on perceived information quality. This solution can be the combination of technical solutions by the technology developers and contextual-situated solutions by local experts and the balance of these solutions can influence the information consumers' perception. This research unfolds how the mechanism of technology implementation may reform the perceived information quality by drawing upon Information Product theory from the literature of information quality and the theory of Social Learning from the literature of social studies of technology. This mechanism of influence can be conceptualized as follows: a generic type of information technology is perceived to be useful and adopted by an organization. The organization faces challenges in implementing the new technology including dealing with information quality issues due to specific institutional and organizational context. The organization tries to provide a combination of solutions to overcome this challenge. The type and balance of solutions can form the perceived information quality by information consumers within the organization.

Keywords: perceived information quality (PIQ), fitness for use, information technology implementation, contextual-situated solution, technology developer-user institutional link, Iran

Introduction

"If you are doing analytics to optimize around customer loyalty, you have to understand data and you have to understand bad data. [...] the psychology of the people in between how the data is getting collected and what the analysis is, is critical. There are people trying to screw you who sit between those clicks and you"

William Beckler (Then-head of innovation and analytics at lastminutes.com, the founder of AllTheRoom.com, one of the interviewees of this study) in his presentation at Loyalty World Conference 2012.

Although significant pieces of research have been done on the notion of data and information quality, their main focus was on the objective quality attributes of information and suggestion of different types of assessment frameworks. This raises the question of how information consumers perceive information quality and also the question of what affects formation and change of perceived information quality. By the start of the 1990s, the then-prevalent view of the concept of data and information, which was perceived as 'by-product' [1, 2] of information systems, changed. Currently it is widely accepted that information should be considered to an independent product whose quality must be assessed detached from the quality of organizational information systems [1, 3-7]. This Information Product view [1, 6-9] considers a significant role for information consumers in the process of information production. According to this view, every information production process has to convert raw data to processed information to satisfy information consumers' requirements and needs [4, 10-12]. For example, Wang and Strong [4] re-categorize various information quality attributes and dimensions which are used to assess the quality of data and information by surveying information consumers from multiple organizations.

This particular attention to the role of information consumers which considers them as the main actors who judge the quality of information, was a substantial step which has changed the objective view of the concept of information quality to a more objective-subjective view. Despite the attention given to the importance of information consumers, the research into data and information quality has not significantly contributed to the notion of perceived information quality and how information consumers perceive the quality of information. In addition to that, the factors which impact on the formation and change of their perception have received limited discussion. This limited understanding of the mechanism of formation of perceived information quality restrains organizations in their design of better information production processes. This lack of knowledge becomes more critical when the intention of information production and the use of information by information consumers are not aligned [13]. Today the reuse of data providing alternative informational value is prevalent and makes for economic use of data.

This study defines perceived information quality by drawing upon the literature of marketing and uses Steenkamp's [14] all-inclusive definition of perceived quality in the context of a product. Steenkamp [14] defines perceived product quality as "an idiosyncratic value judgment with respect to the fitness for consumption which is based upon the conscious and/or unconscious processing of quality cues in relation to relevant quality attributes within the context of significant personal Formation and situational of Quality Attribute variables" (p. 317).

Raghunathan [15] implies that most people's perception is that the use of information technology has significant impact on the improvement of information quality. Parker et al. [16] believe what shapes information consumers' perception of information quality is their needs and requirements, for which they need information. Fisher and Kingma [17] assert that the time pressure under which information consumers use the information together with their experience, directly affect their perceived information quality and the degree to which they rely on their perception. Gorla et al. [18] assert that the perception of system quality and the perception of information quality are intertwined and it is hard for information consumers to distinguish one from the other. Fisher et al. [19] refer to time which is available to accomplish the task at hand, information consumers' experience, their demography and the nature of task at hand as the factors which impact on how information consumers perceive the information quality regarding to the context of the task-at-hand. Fehrenbacher and Helfert [20] argue that the type of information technology which is being used by information customers has impact on how the information quality is perceived.

Although different factors are suggested in the literature of information quality which affect the perceived information quality, the common view among the scholars in this field is that the type of information technology, as the channel which delivers the information to its consumers, directly impacts on the perceived information quality by information consumers. This point is confirmed by Lee [21], who points out that practitioners and information consumers consider "various natures and implications of information technologies" (p. 96) as well as the contextual knowledge to solve information quality deficiencies. Therefore, it is arguable how different types of information technology can influence information consumers' perception of information quality. One of the ramifications of this question would be whether the same type of information technology has the same impact on different information consumers'

perceived information quality. To answer these questions, it is necessary to investigate the dynamics of this influence more qualitatively. This study argues that the way that a type of information technology is adopted and implemented [22] into the context of use and the shaped meaning [23] of the technology in the mind of technology users, who are the same as information consumers in this context, are the main drivers of the aforementioned dynamics.

The aim of this paper is to shed light on this perspective of data and information quality and to fill this gap in the literature which will lead to better understanding of how the concept of information quality is perceived and judged in the mind of information consumers theoretically. Practically, this knowledge helps the of design better information production processes in the context of organizations.

Theoretical Background

Poor quality data in other words dirty data can have serious consequences for commercial and non-commercial organizations. Gorla et al. [18] state that organizational data with the high extent of accuracy, completeness and relevancy can result to a more productive organization from the aspect of making effective decisions, gaining more profits and having more control on the costs of manufacturing. Wand and Wang [3] more cynically note that dirty data can affect and harm the efficiency and success of an organization generally. Dirty data or poor quality data can signify productivity loss or in extreme cases can lead to the failure of organizations [24-26]. Nowadays, many businesses are dependent on data and the data which is produced and consumed in their processes has become one of their valuable assets, and the quality of data can significantly affect decisions which are made in organizations and as the exchange of data connects different departments inside the organization, it can be an important factor of organizational culture [27, 28]. As a consequence, dirty data can have harmful influence on any organization's culture [28, 29]. Dirty data causes organizational users don't achieve the certainty they need to base their decisions on data and even if they make data-based decision, the outcome would be accepted with significant doubts [28]. When data does not meet the data consumers' requirements in an organizations, high costs can occur due to operations interruption and the cost associated with the data maintenance [18, 30]. Woodall et al. [31] argue that some managers may perceive that their organizations' dirty data is one of the reasons that they lose money and get financially disadvantaged but they don't know how significant it can be.

The first wave of research on the concept of information quality which started in the 1980s was inherited its positivistic and intrinsic view from Information Systems research. Researchers were concerned about intrinsic quality attributes of information and their suggested assessment frameworks were mainly used to objectively evaluate attributes such as accuracy, completeness, etc. Information consumers and their requirements did not have any significant roles in these assessment frameworks. The next wave of studies on the concept of information quality [1, 3-7] adopted more interpretive approach and disapproved the pure objective view to the concept of data and information. These pieces of research considered significant role for information consumers for whom a piece of information is produced in the cycle of data management. For example Wang and Strong [4] in their seminal paper argue that researchers and practitioners need a comprehensive framework to categorise different information quality dimensions significantly which enables them to capture the information consumers' requirements more effectively. They have sorted all dimensions into four different categories to classify similar dimensions in the same category. They rationalise these categorisation and conceptualization by referring to information consumers and arguing this method can capture and portray different aspects of information quality much better from information consumers' perspective. These four categories have been labelled by Wang and Strong [4] as follows: Intrinsic Information Quality, Contextual Information Quality, Representation Information Quality and finally Accessibility Information Quality. They also highlighted that information must be fit to the use for which the information consumer requires that piece of information. The notion of 'fitness for use' which was originally adopted from the literature of product quality and quality control [32, 33] is considered taken-for-granted in the literature of information quality. Information consumers are the ones who judge the quality of information and its "degree of usefulness" (p. 1721) [34].

Wang et al. [1] based on their research on the concept of information quality suggest that it's significantly

beneficial that organizations manage their information as they manage their products. They argue that this approach that organizations and practitioners handle their information as a 'by-product' of their information systems has to be changed if they feel it necessary to have information with higher qualities. They state that information, which is a product of systems and processes engaged in producing it, should be evaluated independent of them. The product view on information has been originated from the literature of quality control [32, 35]. Ballou et al. [6] also note that the methods and processes employed in the quality of a product can be used to control the quality of information. They conceptualize the information as a product of information systems. The resemblance of processes that a piece of data may go through to be converted to information to the processes of manufacturing a product is the reason that Ballou et al. [6] call it data or 'information manufacturing system'. They argue that generally organizations benefit in applying the reengineering methods, which are used in product manufacturing processes according Total Quality Management (TQM) approach [36-38], to the process of data production to deliver the data on time to the data consumers effectively and with the minimum cost. As the quality of the product is evaluated by its consumers, according to this framework, the quality of information must be evaluated by information consumers. According to Information Product view, the process of production includes three stages which are as follows: the first stage is collecting or generating data which is the raw material for the information output. The second stage is storing and keeping data in data warehouses and databases. The third and final stage is processing data and disseminating information to the users for their consumption [9, 21, 26, 27, 39, 40]. Lee [21] notes that typical activities for the purpose of improving the quality of data usually include cleansing the data stored in databases while she argues that organizations must consider all three stages of the information production process for quality improvement. In compliance with the view that emphasises on the role of information users in determining the quality of information, the first step for improvement of information quality is to collect data with the purpose of satisfying the final information consumers' requirements and needs [7, 41, 42].

Despite underscoring the role of information consumers in judging and perceiving the quality of information, the literature cannot generally unravel what factors significantly affect this perception and what the mechanism of these impacts is. Generally, it's assumed that every information consumer perceives and judges the quality of information and its fitness for the task-at-hand very contextual and situated. For example, Lee [21] notes that practitioners solve the information quality deficiencies based on their contextual knowledge and their familiarity with the task-at-hand. Therefore, this study plans to fill this gap in the literature. Fehrenbacher and Helfert [20] suggest that resources, information consumers' organizational position and type of information technology they use might affect their perception of information quality. Although different researchers such as Raghunathan [15], Parker et al. [16], Fisher and Kingma [17], Gorla et al. [18], Fisher et al. [19] outline different factors which impact on the perceived information quality, there is an agreement in the literature that the type of information technology has certainly influence on the information consumers' perception of information quality.

The main research question which this study will answer is as follows:

How does a type of information technology influence the perceived information quality by information consumers?

It is arguable that the answer for this question can be found by drawing on the literature of sociology of technology. This study argues that the way a type of generic information technology is adopted and then implemented can have indirect effect on how information consumers perceive and judge the quality of information. From the perspective of social constructionism, Leonardi [43] notes that a type of technology can have 'collective affordances'. Gibson [44] coins and defines the notion of affordance as "possibilities of action". Mesgari and Faraj [45] imply that based on the technology users themselves, social groups they belong to and the technical features of the technology, users can perceive the technology possibilities of action or technology affordances differently. Silverstone et al. [22], Harwood [46] and William et al. [23] use a different term, meaning of technology and assert that based on the ways in which a type of technology is implemented into the users' context of use, its meaning can be interpreted differently. This interpreted meaning drives how users perceive a type of technology can act into the context of use and what different possible actions a type of technology can perform. This study argues the interpreted meaning of technology

by technology users, who are assumed to be information consumers in this study is what drives the impact of information technology on the perceived information quality.

Information technology is integrated into time, context and instance of use and its materiality [47, 48] depends fully on different features of culture, history, economics and society of developing and using sites [49-51]. Its nature is dynamic which implies that its development, appropriation and adaptation to the local context are on-going processes that include a variety of actors and might be repeated frequently [23, 51-54]. The mutual effect among a wide range of technical components and socially constructed elements which are in “constant mutual tension” [49, p.876] makes the adoption and implementation a non-linear process [52, 53]. Technology is not a one-time process as the interplay between technical and social factors leads to introduction of new versions of technology [49]. This perspective rejects the idea of a general and standard solution for multiple social and organizational contexts while it also doesn't imply that technology is shaped and configured according to every specific context, thus, exchanging knowledge and know-how between different actors in the process development, appropriation and adoption is crucial [54] especially in the case of 'configurational technologies' [23]. Therefore, it is necessary to conceptualize how the interplay between socio-organizational context and technological context (in technology adoption and localization process) impacts the judgement and perception of Information Quality by information consumers.

To answer the suggested question, this study adopts Information Product Theory [1, 4, 5] and the theory of social learning [23]. In order to conceptualize the process of localizing information technology, Social learning framework [23] drawing upon Domestication framework [46, 55, 56] and 'Innofusion' [52, 53, 57] is going to be employed. This framework assists in explaining the influence of this dynamics on the information consumers' perception.

Research Method

For the purpose of this study, the case study research [58, 59] strategy has been adopted. In this research, the assumption is that “our knowledge of reality, including the domain of human action, is a social construction by human actors” (p.231) [60], so It should be positioned as an interpretive research [61, 62].

Data Collection

The data used for this research has been collected from the seven cases which has been chosen from Iran. There are world regions and countries in which local organizations always prefer to use updated versions of information technology but they are not able to properly communicate with technology vendors for various reasons and technology vendors don't have significant “local practical knowledge” (p.641) [52]. Considering these reasons, organizations from these countries are very interesting cases in order to explore the effect of the aforementioned dynamics on the perception of information quality. Being at the “unique corner of the IT world” [63], Iranian organizations haven't had proper communications with the leading information technology vendors from the western countries such as the United States while these vendors' IT products are widely being used by them [64]. Given these reasons, Iranian organizations are valuable source of data for this study.

The choice to make contact with the companies from seven different industries can be justified by the intention to theoretically generalise [59, 65] the outcome of this research at the institutional and societal level. This approach helps not to limit the result to a specific industry or at industry level. All these organizations has provided unique setting which serves the best for theoretical sampling [58] of this study.

Case studies' profiles

All these organizations in Table 1 went through difficulties to get the adopted enterprise packages localized and worked in their organizational context. Almost all interviewees have been chosen from the IT, analytics and finance departments. These departments are the pillars of every information production processes in

organizations nowadays. There are technicians and information consumers among interviewees in all organizations. Semi-structured interviews which conducted in an open-ended approach has been mainly used to collect data.

Organizations	Type of the organization (business)	Industry	Size of the organization	Interviewees	Year of establishment
Organization A	Online website	Online retailer	Small	Co-founders, SEO experts	2005
Organization B	University	Education	Large university	Developers and researchers (who published university data on Linked open data cloud)	1949
Organization C	Online Publishing (App)	Publishing	Small	Co-founders, Developers	2011
Organization D	Private bank	Finance and monetary	Large	CRM head, CRM expert, CRM developer	2002
Organization E	Manufacturing	Automotive	Large	IT department head, System administrator, Developer, Finance department head	1996
Organization F	Retailer	Food industry	Medium	IT department head, System technician ,Finance department head	1955
Organization G	Online Advertisement	Advertising industry	Small	Founder, System technician, data analyst	2011

Table 1. The companies' profile

Addressing the researchers' bias

To address and to avoid the problem of researchers' bias, six independent experts and practitioners, who are established and have been working in Iranian IT and Enterprise Package market for at least 10 years, have been interviewed. Their profiles have been presented in Table 2. This strategy also helped to validate and check other interviewees' anecdotes and comments. Document analysis was the other method employed to reduce the biases and to validate interviews' anecdotes and comments. Documents about the companies' profile were collected for the analysis purpose. For the purpose of understanding of information technology evolution from the lens of using Farsi language in computer systems and in the institutional context of Iranian technology users, this study has relied mostly on documents and books which have been published in Iran about it [64, 66, 67]. Although this is not a comparative study, to achieve better understanding of how important it is to have linkage and communication with the technology developers in perceiving information quality, 9 individual experts who have been working in IT and analytics departments in organizations outside of Iran were also interviewed.

Iranian Independent Expert	Field of expertise	Experience in the market
Expert A	He had worked as a developer, project manager and head of IT department in several organizations in different industries. Now, he has his own business consulting small organizations to adopt and implement different software packages.	20 years
Expert B	He started working as a developer but turned to focus on the development of different analytical modules for CRM packages. Now, he has his own business as a consultant for implementing CRM packages especially Microsoft CRM Dynamics in Iran.	12 years
Expert C	He started working as a .Net developer for different organizations. Now, he has his own business which localizes Western developed packages for Iran market.	10 years
Expert D	After getting his bachelor degree in software engineering, he recruited as a developer in a public bank. Now, he is working as senior developer for a company which develops core-banking systems in Iran.	15 years
Expert E	He started working as web designer then became interested in SEO and web analytics. Now, he owns a famous website in Iran which provides SEO consulting for website administrators.	10 years
Expert F	After getting his master's degree in software engineering, he worked for several organizations as an application developer then as an online service developer. Since seven years ago, he has started focusing on SEO. Now, he provides SEO consulting service.	15 years

Table 2. The individual experts' profile

Data Analysis

All interviews were coded into NVivo software in order to conduct thematic analysis [68]. The analysis has been done for each case separately to recognise the unique themes and the themes which emerged across all cases. To interpret data and unanticipated implication of appropriation of technology on perception of information quality at institutional and societal level, interpretive method [60, 69] was employed.

Findings and discussion

One of the notable findings of this research is that the perceived information quality can differ depending on a balance of prescribed-technical and contextual solutions provided with the help of the technology developer or a pure context crafted solution provided without help of the technology developer. The emerged themes from the process of data analysis and key empirical findings are:

1. Adoption and localization of a generic type of information technology such as generic enterprise packages from other institutional contexts
2. Poor implementation, poor fit and confrontation with information quality issues in the context of adopted generic information technology due to organizations' institutional context
3. Balance between technical solutions and contextual solutions to overcome the quality issues
4. Forming perceived information quality and information fitness to the context of use

Adopting and localizing a generic type of information technology

The data which has been collected for the purpose of this research confirms that Iranian organizational users are very interested in using an updated version of technology and they have undeniable interest in using the applications developed by Western developers. Their technological deterministic view to the concept of technology makes them adopt western developed applications over domestic ones. The only exception is when they need very context specific applications or using foreign developed applications is forbidden by the law. Bakhshi [64] outlines the reasons for Iranian users' behavior and the main reason is that for many

years especially before the Islamic Revolution they were only consumers of information technology and did not have any contribution to the development of this technology. Their interest has also amplified significantly by advent of the internet in the 1990s in Iran and increase number of digital entrepreneurs in Iran [70]. The head of CRM of Bank D expresses his significant interest of using Microsoft CRM:

“....If people from other Iranian banks ask me to suggest them a product to develop their CRM practices, without any doubt, I will suggest Microsoft CRM.... domestic companies such as [anonymized] and [anonymized] cannot provide the same solution as Microsoft Dynamic CRM, they don't have the technical expertise and experience which Microsoft has. If we did not have any CRM system in place in our bank today, I would suggest Microsoft Dynamic CRM to the bank again with 100% certainty”

In another interview a data analyst from organization G comments on Google Analytics service they use:

“It is vital for us to have a tracking system installed in place to track who clicks on our customers' ads. Without this system we can't run our business at all ... To answer your questions, yes there are a couple of Iranian businesses which provide tracking systems but they don't have the resources and data that a giant such as Google has”

Being enthusiastic to use updated and Western developed technologies, Iranian organizations had challenging moments in implementing adopted information technology into their institutional and organizational context. Fleck [52, 53] implies that the successful implementation of a type of technology, specially a configurational one as he calls, needs significant cooperation between the technology developer and the technology user organization. In the case of Iranian organization, communication and cooperation with the technology developers does not exist to implement configurational information technologies. There are two reasons for it, the first one is the sanctions imposed by the United States government since the Islamic Revolution in Iran and the second one is the Iranian government reluctance to consumption of foreign developed software applications and its policy to promote the internal ones. Expert B refers to the problem of communication and cooperation with the technology developer in implementing the technology by exemplifying Microsoft CRM:

“First of all the copy of Microsoft CRM which is being used here is not provided any support by Microsoft. Do you get my point? Literally, everyone who chooses to use Microsoft CRM here doesn't get any support.....How can Microsoft work in Iran while the country is under sanctions? For example, if you want the license for an Iranian company, it doesn't sell to you. For an Iranian there is no possibility to get the license. For example, in one instance I bought the license with the name of an Iranian company subsidiary in Dubai. The company uses the license here to connect to Microsoft and asks its questions. But this is a rare case.....”

The other benefit of having institutional link to the technology developer is that the link can act as a channel to transfer “local process knowledge” (p. 650) and “knowledge of the user organization and its methods and business context” (p. 74) [54] to the technology developer. Esfahbod [67] shows how the lack of knowledge of Farsi language, Iranian native language, by Microsoft whose products are widely used by Iranian users and organizations have been challenging for them:

“[S]upport in Microsoft products was not perfect [...] the Persian language [Farsi] has unfortunately merely been considered a variant of the Arabic language [...] it has] affected the common practice and user experience of some finer details of Persian computing” (pp. 1-3)

Expert B comments on the Microsoft Enterprise packages including its CRM and mentions that the challenges of its implementation in the context of Iranian organizations as its accounting practice is different

than the dominant accounting practice in Iran:

“The main problem of implementing Microsoft Enterprise [Package] in Iran is Microsoft Accounting because Accounting principles in Iran are completely different [best practices are not compatible with Iran legal and financial settings]. You know, companies who want to use Microsoft Enterprise have to use a domestic application for their accounting system and integrate it with other Microsoft Enterprise applications such as CRM. Most of the domestic companies cannot integrate these applications very well”

Bank D had a challenging process of implementing Microsoft CRM as it had to connect its legacy core banking and establishing this connection was not easily possible for the technical team in the bank and they did not have any help from Microsoft itself or its certified partners. As Microsoft does not officially have any market in Iran, it does not feel to invest in gathering local knowledge or incorporating Iranian best practices into its products. The head of CRM team of Bank D describes their experience of implementation:

“....we started with Microsoft CRM 4 then migrated to CRM 2011. CRM 2011 has approximately 500 new features compared to CRM 4. Imagine yourself CRM 4 had been released I think in 2008-2009. After 3 years CRM 2011 was released and we decided to migrate due to these features. It was a challenge although we have had a good team of experts in the bank, even some of them got Microsoft Certificates from other countries [Getting Microsoft Certificate isn't possible inside Iran], if I want to be honest, we are still new comers and don't have all resources they have....We did the migration honestly it was not as smooth as we intended, but we did it....you know, we have connected the bank's core system to CRM and the data is replicated for Microsoft CRM. At first when we set up CRM 4 the link was not very well established as we did not know database structure of CRM as we know now, I think it's normal”

Poor implementing, poor fitting and confronting with information quality issues

Poor implementation of technology in the context of an organization leads to poor fit of the adopted technology especially in the case of configurational technologies to organizational processes and context [71, 72]. Strong and Volkoff [72] calls this situation ‘misfit’ and assert that an organization can continue handling its daily processes but it would be challenging and problematic for the organization. They imply that this misfit has consequence for an organization's functions, information and competitiveness.

The data collected for this study confirms that one of the implication of poor implementing without technical help of the technology developer is on organizational information. Expert B comments on how making link between legacy applications and adopted applications without the help of the technology developer is hard. He implies that making this link is sometimes the source of information quality issue while data which is collected and stored in database is not intrinsically dirty, the poor link makes the processed data not to have intended quality as Expert B comments:

“[C]ompanies who want to use Microsoft Enterprise [Package] have to use a domestic application for their accounting system and integrate it with other Microsoft Enterprise applications such as CRM. Most of the internal companies cannot integrate these applications very well.....I was involved in data cleansing project in which we understood the problem was not the quality of data, the problem was how these applications were working”

The head of CRM in Bank B confirms when they first implemented CRM4 in the bank the result of the analysis was not what they expected or as he called “buggy results”. He also told us that although the information from CRM analytics did not have the quality they expected, they wanted to promote using it

because their team and their CRM application were not very established. He believes that if the information from the CRM application were ignored at that time, it would be eliminated soon as using CRM applications and in general using data analytics was not conventional in Iranian organizations. They could convince the management team to have the other teams use this information as compliments. He mentioned that they continued working on the link between their core banking system and Microsoft CRM to improve it until reaching to satisfactory configuration. He believed that after implementing CRM2011 they had reached to the point and according to his opinion data analysts could get good result from the system based on the intrinsic quality of data stored in the system and the expertise of the analysts to query the system.

Balancing between technical solutions and contextual solutions to overcome the quality issues

To address the quality issues which is associated with poor implementation, organizations usually adopt a configuration of technical and contextual solutions. For technical solution, it is necessary that organizations have related technical knowledge [72] or have a proper link and communication with technology developers [52, 53]. This proper communication can also transfer local knowledge to the technology developer and consequently technology developer can also have significant role in providing a balance technical-contextual solution. Eshraghian et al. [73] argue that the technology provider's knowledge, about the context in which the technology is used for the purpose of information production, may have important role in fitting the configurational technology to the context and encountering less information quality deficiencies.

Lee [21] argues that practitioners in many cases use the contextual knowledge to solve information quality deficiencies. The data which has been collected for the purpose of this study shows that the balance between these technical and contextual solutions depends on how the organization can institutionally communicate and get help from the technology developer. One of the analysts (we call him analyst A) who has been in the CRM team of Bank B since the implementation of Microsoft CRM4 told us:

“Since the day that the management team has asked other business teams, such as the insurance sale team for which I was working before I moved to the CRM team, to incorporate CRM analyses into their decision-making processes, I was one of the members who have been attending into their meeting on behalf of the CRM team....When they discussed about the results which we presented them they judged the analyses themselves and their judgements were mainly based on the experienced members' agreements on the analyses. If there was any conflict or they did not like the analyses, the teams usually followed what their own analyses were”

Although technicians in the CRM team had tried to improve the implementation from CRM4 to CRM2011 continuously, to address information quality issues the adjustment of the balance of solutions was leaning toward the contextual solution. The contextual solution includes the experienced members of team's evaluation of information. But as the analyst comment shows this evaluation was not very detailed and did not include technical assessments. They judged the quality of information as to be useful or not and depending on their perception they decided to use the information or not.

Forming perceived information quality and information fitness to the context of use

As it has been mentioned in the theoretical section factors such as information consumers' experience of working with the information and their knowledge of context directly impacts on the perceived information quality by information consumers. Our analysis of the data collected for this research reveals that this factor is mediating the influence of adopting and implementing of a configurational technology such as

information technology on the perceived information quality. The head of CRM of Bank B believes the link between the core banking system and Microsoft CRM has been established without any problem:

“..... After lessons we have learnt and the technical knowledge we have acquired these years, I can confirm that the system works without any problem in the bank. I don't think the system implementation causes any problem regarding to the analyses or the information users get from the system”

He also refers to the release of the new version of Microsoft CRM at that time but because of establishment and acceptable configuration of the previous system and difficulties they went through the bank did not have any plan to upgrade to the new system soon:

“Currently, Microsoft has released 2013 version, which I have heard, has new features but we don't have plan to upgrade. Microsoft has changed its database structure and interface, thus, we have waited for next version to see Microsoft roadmap and to the point we really gain something by upgrading”

Analyst A who has been part of the CRM team and occasionally connects this team to the other teams believes although now system works better and according to him its analyses are more reliable there is not much change in the teams' strategy to use this information:

“They still have the same approach, they invite me to their meetings and I present the result of our analyses then the experienced members of the team should judge whether to use it or not.... I think the result of our analyses has improved significantly but you don't feel any change in their approach. Before I joined the CRM team, I had been working in some other teams, I know that they don't have the same approach for the financial analyses they get from the core banking..... My view is it takes time for them to trust the system or the new members who did not experience the CRM4 era must join the team”

Analyst A's comment clearly refers to the experience different teams had with the information during CRM4 and its poor implementation. His comparison between the information from two different systems makes it clear how the information which information consumers used to get from a type of technology as a channel of delivering information can shape their experience and how this experience can form their perceived information quality in the future. It also shows it does not matter what the objective quality of information is in some occasion the perceived information quality can shape their judgement and this judgement is to choose between only two options: use the information or not to use the information.

Conclusion

This study clearly conceptualizes the impact of information technology adoption and implementation upon the perception of information quality when the adoption occurs across different societal and institutional contexts. This in-depth study covering seven Iranian organizations, reveals that the institutional link between the technology developer and the technology user, which directly impacts the implementation and localization process, also indirectly impacts how the perception of information quality is shaped. Although the government promotes Iranian organizations to use locally developed IT applications, these organizations have not lost their interests to adopt and implement the ones which have been developed by the leading and reputable western companies. It is noticeable that these organizations use local consultants and developers who don't necessarily have the original developers' resources and knowledge. This case of Iranian organizations shows that this dynamic of adoption and adaption may lead the users to interpret the

meaning of technology in a way which deviates from the original meaning intended by the technology developer. The sequence of these events with information deficiencies in the sequence of these events occur, may reshape and affect the users' perception of information quality.

This research has identified four stages in the dynamics of technology adoption and localization, which can affect how information quality perception is shaped. These stages are as follows: 1. Adoption and localization of a generic type of information technology such as generic enterprise packages from other institutional; 2. Confrontation with information quality issues in the context of adopted generic information technology due to organizations' institutional context; 3. Adjustment in the balance between technical solutions and contextual solutions to address the quality issues; 4. Formation of the perception of information and its fitness to the context of use. This study has provided the conceptualization of interplay between technology adoption, technology meaning and the perception of information quality. This research suggests the configurational nature of information technology can indirectly shape and reconstruct how information consumers perceive information fitness for use.

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